

obvious evidences of anemia in the general examination of the patient and in the examination of the stained film specimen of blood, there is no need for consuming the time and energy necessary for a red count. The essential parts of blood examination in the vast majority of cases are the total count of white corpuscles and the examination of the stained film. This is the direction in which we want to put our accuracy.

I think it is unnecessary further to multiply examples. Anyone can think of similar cases as soon as his attention is turned to the matter.

III.

I wish now to turn to quite a different aspect of my subject, yet one which is a branch of the same difficulty, I mean our failure properly to direct the current of the scientific tendencies of our time. It is a common, but I believe a very fallacious belief among physicians, that "laboratory work" is a term as wide as "accurate work," and that clinical work must needs be comparatively inaccurate. Let us glance for a moment at the derivative meaning of these words. The laboratory is simply a place for "work." The word means nothing more. Clinical means simply "at the bedside." Now, my contention is that for most of us the best place for work is at the bedside. That is the place where the most essential information can be acquired both for the benefit of science and for the benefit of the patient. There is no more pernicious fallacy extant than that which supposes that there is a necessary division between the "laboratory man" and the "clinical man," or between "laboratory work" and "clinical work." This is a distinction which Dr. Deaver of Philadelphia has done much to harden. He is never tired of insisting that the point of view of the clinician in diagnosis is superior to that of the laboratory worker. But why in heaven's name should we have to choose either one? Now why should not each one of us make himself master of all the facts necessary for the diagnosis of his case, both the facts obtained by what we ordinarily call the clinical examination of the patient and those obtained with the help of the microscope and of chemical reagents. If one had to choose (for example, in the diagnosis of appendicitis), between knowing only the facts obtained by microscopical and chemical analysis, and knowing only the facts obtainable at the bedside without the help of these agencies, why, I suppose any of us would choose the bedside as the better standpoint for observation. But my point is that we never ought to be forced into making any such choice. Not either one without the other, but both. That is what we want. No one is so foolish as to depend wholly upon a single method of examination in diagnosis whether that method be either a measuring of temperature, which we ordinarily call a "clinical fact," or the counting of leukocytes, which we ordinarily call a "laboratory fact." All such facts are of value only when considered in connection with all other available evidence. They are like single letters of the alphabet, which in their isolation are almost meaningless, yet when grouped into words may be most significant. A diagnosis in most cases should rest upon a group of data which together spell out a word.

The harm done by the attempt to separate our examination of the patient's functions into two sharply differentiated portions, and to assign one portion to the individual known as the "laboratory man" and the other to someone called a "clinician"—the harm, I say, done by this attempt consists in part in a loss of essential facts in the attempted transfer from one man to another. For such data are not readily transferable, like coin, without loss of value. Few can interpret the results of a blood examination, or a urinary examination, unless they are constantly making such examinations themselves. Indeed the at-

tempt so to interpret them is almost as hopeless as the attempt to convey satisfactorily to another what one feels in palpation of the abdomen. Laboratory facts are *personal* facts as much as the results of palpation, and they are almost as difficult to convey to a second person. Moreover, our interpretation of the crude data obtained by our senses is apt to be a very faulty one, if we attempt, as a so-called laboratory man often has to do, to make this interpretation wholly uninfluenced by the clinical aspect of the case. Those best trained in microscopical and chemical analyses are coming more and more to feel unwilling to hand over to another man any hard and fast conclusions based upon the isolated facts in his possession. More and more we are finding that the men who examine scrapings or fragments of a tumor, want to see the case in the wards, and to get possession of all the facts ascertainable, just as the clinician is more and more unwilling to accept a report from the laboratory without seeing the specimens himself.

Dr. Welch has pointed out in a most timely way, in a recent discussion in the Johns Hopkins Hospital Bulletin, how unwise it is to attempt to construct clinical histories from postmortem evidence. But the evidence obtainable by what we still insist on calling "laboratory work" is usually as one-sided as the postmortem evidence just alluded to. It needs to be filled out and corrected by facts obtainable only at the bedside.

Summing up what I have said, it seems to me (1) that we need to direct the great current of scientific medicine, first by observing a due proportion in the amount of time and the degree of accuracy assigned to the different portions of our examination of a patient, and (2) that we want to rub out as fast and as far as possible the distinction between laboratory diagnosis and clinical diagnosis.

A CONTRIBUTION TO THE STUDY OF VARICOCELE.*

By DUDLEY TAIT, San Francisco.

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THE HISTORY of varicocele is that of its treatment. Few morbid conditions have received more attention from clinicians than has varicocele; and, although its pathological and clinical description are of comparatively recent origin, mention of its treatment is made as early as the first century by Celsus, who was the first to write with any degree of precision on the subject. Celsus practiced the radical cure of varicocele, which became the treatment of choice under Paulus Egineta, Guy de Chauliac, Franco and Ambroise Paré. This procedure reigned supreme to the middle of the eighteenth century, when a new era was ushered in; the "good hot wine" was abandoned for ointments and emollients, thus frequently inducing heretofore rare complications—phlebitis, purulent infection, etc.—and explaining the formal interdiction of operative methods by all contemporary classic authors. The resulting period of operative abstention was followed by an era of bloodless or conservative surgery (compression, crushing, burning, seton, acupuncture, galvanopuncture, coagulating injections, etc.), none of which procedures proved infallible or innocuous. Hence, the general discredit of all operative methods in varicocele until the dawn of the Listerian age. These diverse fluctuations may be of interest to the student as illustrative of the various doctrines which from time to time guided surgical interventions.

Etiology.—Our knowledge of the etiology of varicocele is nil. Writers of text-books continue complacently to reiterate a long list of incongruous

*Read at the Thirty-fourth Annual Meeting of the State Society, Paso Robles, April 19-21, 1904.

anatomical factors, and teachers, with childish unanimity, seldom fail to burden their students with these same fallacies. Others would render the problem still more obscure by ascribing varicocele to embryologic modifications! (Escat.) The study of the cremaster as a causative agent in varicocele is not devoid of interest. First mentioned by J. L. Retit (1707), thoroughly investigated from the double standpoint of anatomy and physiology in the thesis of Pérrier (Paris, 1864), and again considered by Segond (1885), this theory, like numerous other European creations, slowly drifted across the pond, and in 1892 was rehabilitated by McGraw as an "original contribution."

The cremaster muscle passes along the cord, through the inguinal canal and the external abdominal ring, into the scrotum, where it almost encircles the cord. The lower, dissociated fibres pass anteriorly and posteriorly to the testicle, forming a concave support for the latter. The cremasteric fibres are attached to the external surface of the cremasteric fascia, *i. e.*, to the prolongation of the transversalis fascia. The action of the cremaster is strikingly illustrated in abdominal strain or severe coughing; its fibres contract simultaneously with the muscles of the abdominal wall, causing compression of the veins within the inguinal canal, elevating the testicle, drawing taut the fibrous sheath of the cord, thereby compressing its vessels and compensating for the insufficiency of the valves in the spermatic veins. In individuals with relaxed dartos and undeveloped cremaster, the spermatic veins are unable to cope with the effects of increased pressure. Hence, dilatation and possibly stasis. Observation of the cremaster during radical cure of hernia, with and without varicocele, coupled with the partly established relation between the condition of the valves of the spermatic veins and the development of the cremaster, apparently point to the latter as a factor in the production and prevention of varicocele. Vastly more important from every point of view is the question of:

Frequency of Varicocele.—Varicocele exists in one out of three or four males between the ages of 18 and 30. That a difference of opinion prevails in France and England, and also in this country, as to what constitutes a pathologic condition of the spermatic veins, is evidenced by the percentages of rejection of recruits in these countries. Thus in England we find 2.3%, and in France only 0.16%. In the vast standing army of France the percentage of men retired yearly from service on account of varicocele averages only 0.013% (Gaugot); no increase has been noted in the cavalry regiments. Senn, in examining 9,815 recruits for the Spanish-American war, found varicocele present in 2,078. One-half of these were entirely ignorant of the condition, and only three or four acknowledged the slightest discomfort or pain. The frequency of slight varicocele in genito-urinary neuropaths is unfortunately too well known. In no case, however, are the genito-urinary disorders (pollakiuria, dysuria, lumbar pains, spermatorrhea, impotency and other sexual neurasthenic symptoms) due to the venous abnormality. While the patient attributes all his symptoms to varicocele, his attention has almost invariably been attracted to this benign lesion through the influence of a physician, or by some "confidential scientific literature."

Pathological Anatomy.—The pathology of varicocele is variable. Cases differ from one another, both as regards causes and pathologic conditions. However, the complete development of varicocele generally comprises two stages: First, dilatation; the majority of varicoceles show no further progress. In such cases the veins are not varicose; the walls remain thin. Secondly, the dystrophic disturbances characteristic of chronic phlebitis; *sclerosis* and

hypertrophy of the muscular layer. The sclerotic lesions occur late and very gradually; unlike those of arterio-sclerosis, they are generally restricted to a small area. Cases showing varicose involvement of the entire spermatic vein have been reported (Segond). The intra-testicular venous plexus may also be involved (Curling).

Associated sclerotic lesions of the periprostatic venous plexus are mentioned by Guyon and Segond. In certain voluminous or rapidly developing varicoceles, the testicle may be smaller and softer than normally, but the cause and nature of this condition have never been satisfactorily explained. The pathologic results of passive congestion so well illustrated in chronic cardiac lesions (hepatic cirrhosis, etc.) are not demonstrable in patients with pronounced varicocele. Hence, while the testicle may in some instances become softer, the sclerosis, with consequent testicular atrophy, mentioned by some writers as a sequel to varicocele, is very seldom marked. The frequency of chronic vaginalitis in old varicocele may account for the slight degenerative lesions in question.

The following table summarizes the varieties and extent of the lesions in varicocele:

1. Total, in which all the veins are involved.
2. Anterior, in which the anterior group alone is affected.
3. Posterior, in which the posterior group alone is affected (rare).
4. The epididymal form, in which the veins of the globus minor are affected (very rare).

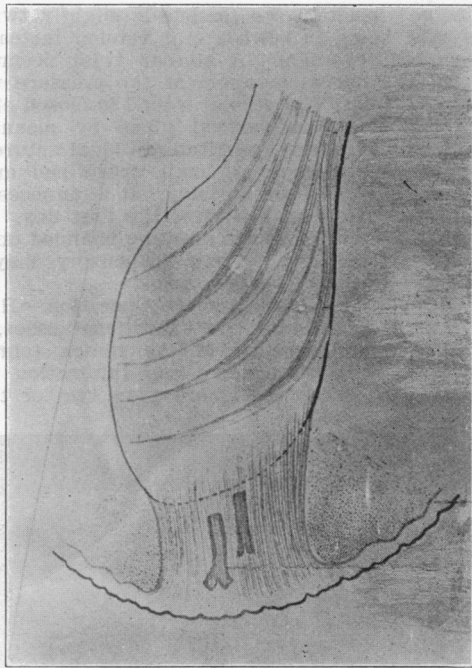
In another group of patients, varicocele may be associated with a series of abdominal conditions (dilatation of stomach, floating kidney, hepatoptosis) indicating insufficiency of connective tissue. A still rarer category is the symptomatic varicocele of Guyon (abdominal and renal tumors). Peri-epididymitis has been noted in the epididymal variety of varicocele (Mignon and Sieur). *Many surgeons fail to examine properly their varicocele patients.*

Palpation of the cord is inadequate. The patient should be examined in the vertical and horizontal positions. The condition of the testicle and adnexa (epididymis, tunica vaginalis, vas) must be carefully noted. Furthermore, the circulation and degree of stasis in the spermatic veins should be tested, first, by elevating the scrotum, and thereby emptying the veins; second, by inserting the tip of a finger into the inguinal canal. Upon withdrawing the finger a sudden reflow of blood will frequently be noted in the dilated veins, thus demonstrating the insufficiency of their valves.

Treatment.—The firm belief from time immemorial in an intimate relation between varicocele and innumerable physical and mental disorders explains the unceasing attention given by surgeons to this condition and the consequent creation of an endless list of surgical measures for its relief. It would appear, however, that centuries of study have been for naught; to-day the method of choice is that resorted to by the surgeons of ancient Rome—resection of the veins. The well-nigh universal favor with which the latter procedure is held was forcibly illustrated at a recent State Board (California) examination, when 68 out of 69 applicants advocated this mode of treatment.

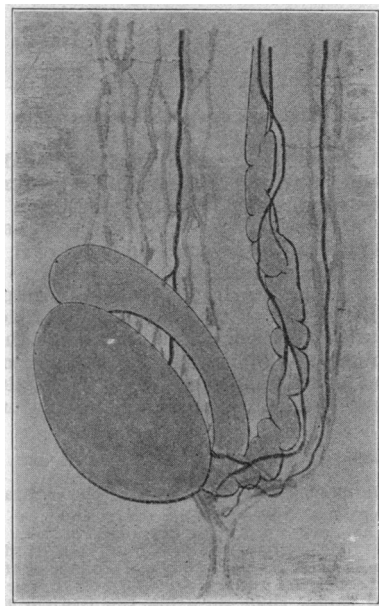
Resection of the Spermatic Veins.—The extremely variable technic of resection of veins is already an indication of an imperfect method. Many surgeons, without sound pathologic reasons, invariably resect a single group of veins, either the anterior or posterior; others remove a few veins from each group. The majority, however, ligate the cord "en masse" minus the vas. While the vas may be easily recognized and avoided, the spermatic artery, on the contrary, is seldom seen in dealing with the anterior group of veins; even upon the cadaver its detection

is difficult. In the opinion of Bennett, after resection of the spermatic veins there is an over-supply of blood without the proper means for its return, as evidenced by "post-operative softness and fatty degeneration of the testis." From these doubtful pre-



No. 1. Lower fibres of cremaster-scrotal ligament with included veins.

mises Bennett deduces the necessity of ligating "en masse" the entire cord, excepting the vas.¹ To those who would emulate such unscientific conduct, the following facts should be recalled:



No. 2. Arterial supply of the testicle and anastomotic veins below.

First, collateral circulation through the cremasteric and deferential arteries is usually present, but may be wanting, as illustrated in the not altogether

¹Amussat (1828) was the first to ligate the spermatic artery in voluminous varicocele.

infrequent occurrence of testicular atrophy following resection of the veins.

Second, the sad and unmerited fate of the distinguished French surgeon, Delpech, who was assassinated by a patient suffering from bilateral testicular atrophy consequent to an operation for varicocele.²

Arguments Against the Usual Operation of Varicocele (Excision of Veins).—First, from the standpoint of pathology, it is not rational. In the great majority of instances the veins do not offer marked lesions; they are simply dilated; the walls remain thin and show no sclerotic changes. The dystrophic lesions occur much later and more gradually than in varicose veins of the lower limbs, and apparently indicate nature's method of controlling ectasia of the veins.

Second, the severe and not altogether harmless character of the operation is not warranted in an affection, which in most instances may be called an innocent "phantom tumor."

Third, recurrences after excision are not unknown, and complications are rather frequent. Indeed, according to English authors, softening of the testis invariably occurs after resection of the veins.

Fourth, the frequent association of hydrocele and varicocele, especially in old and large varicoceles (25 to 30%), calls for a simpler method, capable of curing both conditions.³

Fifth, the modern operation of resection of the veins may be safer than those of ancient times, but our late results are in no sense superior to those reported by Celsus.

Resection of the scrotum, first advocated and resorted to centuries ago by Cumano⁴ (of Trieste) was a step in the right direction.⁵ This mode of making what has been called a "dog scrotum" exposes to well-known complications and to not infrequent recurrences. In my experience recurrences are more frequent in the transverse resections than in the antero-posterior. In a series of 67 resections, Annequin reports 21 recurrences. Subcutaneous shortening of the scrotum by purse-string silk ligature (Nimier) likewise exposes to relapses.

It is my belief that in view of the foregoing statements a rational and efficient method of treatment for varicocele should fulfill the following conditions:

First, no tissue should be removed.

Second, the arterial and nerve supply of the testicle should not be endangered.

Third, the operation should be simple, rapid, bloodless and devoid of great pain.

Fourth, the patient should not be compelled to remain in bed.

I believe all these conditions are fulfilled by the operation of *transposition* (Longuet) of the testicle combined with eversion of the tunica vaginalis. This operation is begun as for eversion of the tunica in hydrocele, with, however, the following modifications: The scrotum is held firmly by the assistant, who pushes the testicle upward 5 to 8 cm., according to the degree of laxity of the scrotum and the level of the opposite testicle. Under local, or exceptionally spinal or general anesthesia, a 4 to 5 cm. incision is made directly over the upper pole of the elevated testicle. A similar opening is made in the tunica, care being taken to carry the incision suf-

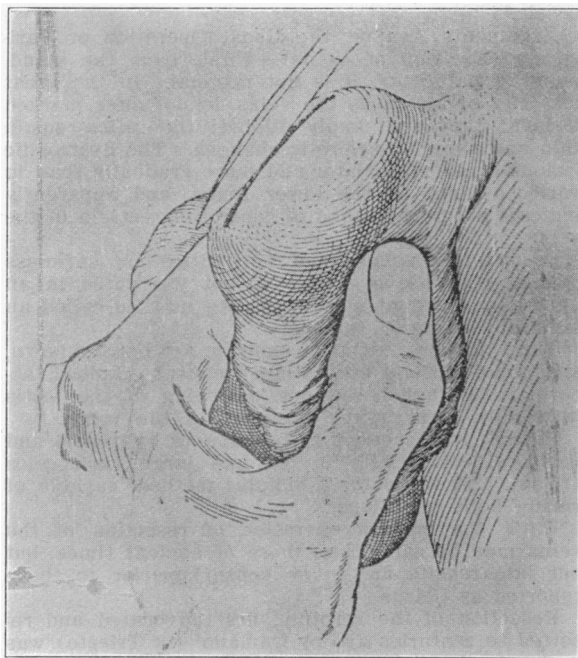
²The absence of collateral circulation in the dog explains Sir Astley Cooper's error in laying great stress upon the sloughing of the testis in experimental ligation of the cord.

³Finney, of the Johns Hopkins Hospital, and Chas. Mayo, of Rochester, invariably evert the tunica after resection of the veins for varicocele.

⁴Resection of the scrotum is erroneously attributed to Sir Astley Cooper (1839).

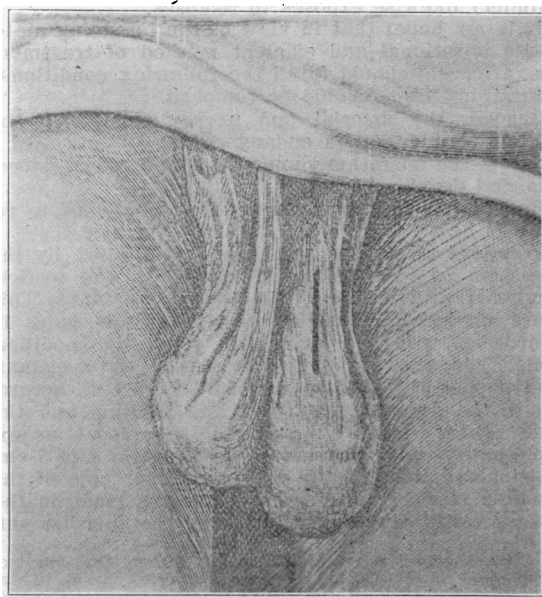
⁵Chassaignac, by a single application of his famous ecraseur, resected the veins and a portion of the scrotum, thereby elevating the testicle. This identical principle reappeared in the so-called "Bennett operation."

ficiently high to avoid all folds or *culs de sac*. By means of pressure from behind, the assistant now luxates the testis from its serous sac, and then lifts it gently upward between two fingers, strictly avoiding traction upon the cord which will invariably



No. 3. Incision over elevated testes.

cause pain and nausea. The different scrotal layers retract in the direction of the cord, the posterior surface of which comes directly into view. Laterally are the edges of the retracted tunica which are sutured around the cord, including the subjacent



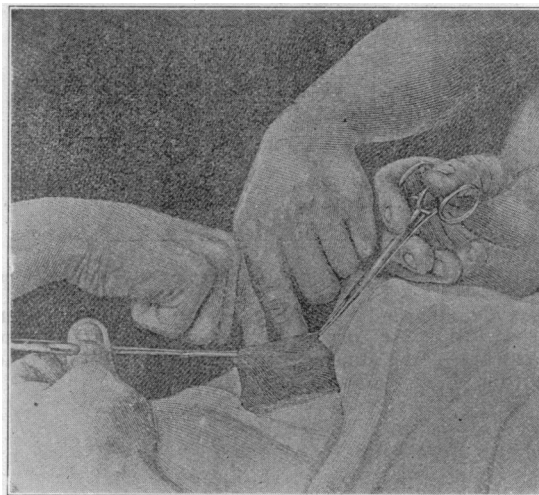
No. 4.

cellular tissue and approximating the edges of the serosa in such a manner as to make a snugly fitting, natural elastic bandage, as high as possible, around the cord. A continuous or interrupted catgut suture may be used. All folds in the tunica should be avoided. Both index fingers are now inserted into

the loose connective tissue adjoining the raphe about 6 to 8 cm. higher than the original position of the testicle, and then rapidly separated a distance of 5 or 6 cm. This step is both painless and bloodless. The testicle is then carefully dropped into the resulting cavity.*

In its new position the testicle is slightly twisted on its axis, being in retro-lateral version instead of in normal anteversion. A similar twist occurs in the cord, and serves to augment the pressure upon its blood vessels. The scrotal wound is closed either in the transverse or vertical plane by means of Michel's staples, which constitute an ideal suture for wounds of this region. A small gauze pad and a suspensory complete the dressing. It is unnecessary to keep the patient in bed after the first day. The staples are removed and the dressing changed on the fifth day. Both dressing and suspensory may be dispensed with after the first week.

Local Conditions Subsequent to Operation.—Habitually, the reaction is nil. In exceptional cases, necessitating slow dissection of the tunica (chronic vaginalitis), some tenderness and infiltration may supervene, but rarely last more than two or three



No. 5. Making a new pouch for the testicle.

days. Mobility of the testicle may be noted as early as the second day. It is invariably present at the time of the removal of the staples. Upon close examination an anterior meso-testis will be noticed corresponding to the scrotal incision. It was the existence of this anterior attachment (first noted in *Annals of Surgery*, April, 1901) that prompted both Longuet and myself to transpose the testicle in varicocele. After a few weeks the position of the testicle may be somewhat lower than at the time of the operation, but it will not descend to its original level. Its mobility gradually increases, and during the

*The elevated position of the testicle can be made more secure by using the ends of the highest suture of the serosa in closing the upper part of the scrotal incision.

In Longuet's operation for varicocele, a sheath is made for the cord up to the inguinal orifice, using the cremasteric fascia above and the everted tunica below. The testicle is then transposed. In Parona's operation, the edges of the everted tunica are sutured to the pillars of the inguinal canal, thus elevating the testicle and covering the vessels of the cord, some of the veins of which may be resected, if necessary. Mauclair, after resection of the veins, sought to elevate the testicle by suturing it to its fellow through the raphe (intertesticular anastomosis).

The testicle invariably descends after resection of the veins. Phocas ascribes the descent of the testicle in varicocele to the shortening of the scrotal ligament. In his operation the scrotal ligament is cut and the testis raised without opening the tunica.

fourth week compares favorably with that of the opposite testicle.³ The everted tunica gradually retracts in the direction of the testicle, forming a dense compressing sheath to the inclosed vessels. Palpation of the lower portion of the cord illustrates these facts conclusively. The appearance of the scrotum on the operated side shows the effect of the new position occupied by the testicle.

Results.—Having operated only five times during the past year by the above described method, I can offer but very meager data upon the all-important chapter of results. Two classes of cases were treated: First, painful varicoceles (two cases); second, voluminous varicoceles (three cases). In the first class the painful symptoms ceased as early as the third day. In one of these cases the testicle showed an appreciable increase in size shortly after the operation. In the three cases of voluminous varicocele the scrotum soon retracted to the new position occupied by the testicle. Palpation showed collapse of the spermatic veins in all three cases, and in one case a slight dilatation of the veins in the region of the globus minor. None of the patients wear a suspensory. Sufficient time has not elapsed to warrant conclusions regarding late results.

From numerous experiments on animals, I was able to demonstrate the following facts:

First, a new collateral venous circulation as evidenced by loose and very vascular connections between the albuginea and the surrounding cellular tissue.

Second, an increased normal collateral circulation, as illustrated by the marked development of the intra-testicular vessels and the great development of the veins in the scrotal ligament leading from the testicle to the walls of the scrotum.

Third, numerous macroscopic and microscopic sections of the testes failed to reveal degenerative lesions. Active spermatozoæ were invariably found in the vas in each of the above experimental cases, the majority of which were examined six and nine weeks after operation.

Fourth, a new fibrous capsule may be noted as early as the second month after operation. This may account for the rare cases of recurrence after total excision of the tunica.

Operative Indications.—In civil life, varicocele is not looked upon as of any moment, and it can be truly stated that, excepting in applicants for the army and navy or for positions in some public departments, operations are very seldom necessary, or even justifiable.⁴

In the military and naval circles of this country alone much importance is attached to varicocele, and the expediency of its treatment by operation was not long ago urged in a widely circulated report emanating from the office of the surgeon-general. Hence, the vast number of such interventions in military hospitals. However, the high character of the recent work of the medical department of the United States army amply compensates for the above egregious blunder. In the great armies of France, Italy and Belgium varicocele operations are of excessive rarity (Dardignac).

The treatment of the vast proportion of varicoceles in sane individuals calls for nothing more than the temporary use of the suspensory and some local hydrotherapeutic measure.

The following, modified after Sébilleau, is presented as a resumé of the operative indications in varicocele:

³During six years of work in the Paris hospitals, I saw fewer operations for varicocele than during a period of six months in this country; two recognized surgical authorities in that city (Trelat and Le Fort) had never, in twenty years of hospital service, observed a varicocele requiring operation.

⁴See page 366.

One should operate.

1. Large or painful varicocele, inducing testicular atrophy or marked endophlebitis.
2. Varicocele causing the rejection of candidates for certain positions (army and navy).

One may operate.

1. Voluminous, painless varicocele, equivalent to an appreciable deformity.
2. Smaller varicocele at the patient's repeated request to be rid of an infirmity.

One should never operate.

1. Varicocele in genito-urinary hypochondriacs or in neuresthenics.
2. Simple dilatation of the veins inducing no symptoms. (The most common form of varicocele.)

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TREATMENT OF TYPHOID FEVER.

By RAY LYMAN WILBUR, M. D., Stanford University.

(Continued from page 345.)

Drugs.—The drug most used was a teaspoonful dose of saturated solution of magnesium sulphate, one to three times a day, and it usually did very well. At the very onset of each case, and frequently thereafter, when the constipation or the fermentation were troublesome, calomel in small doses ($\frac{1}{4}$ grain), with sodium carbonate (1 grain), repeated every half hour for three to six doses, and followed by milk of magnesia \mathfrak{z} ss, was most useful. Later, in many of the cases, the ordinary compound rhubarb pills or compound licorice powder were used with success. Pills containing aloes, or, in fact, the vegetable products in general, should not be used during the period of active ulceration; for the form of peristalsis which most of them excite is, in my opinion, more apt to induce hemorrhage.

Treatment of Hemorrhage.—Nine cases of severe hemorrhage came under observation. Of these cases, one patient died from hemorrhage (autopsy), one probably from perforation following hemorrhage (no autopsy), one from perforations four days subsequent to hemorrhage (autopsy), one four weeks after hemorrhage from a general toxic condition, endocarditis and embolism. The treatment of these cases was as follows: First, the nurse was in each case fully instructed what to do if blood appeared in the stools, or the temperature suddenly dropped without evident explanation, or the patient's thirst or pallor suddenly increased with coincident weakness of pulse. Elevation of the hips, absolute rest in bed